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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P0881	FOR FURTHER ACTION See Form PCT/PEA/416	
International application No. PCT/GB2004/004001	International filing date (day/month/year) 20.09.2004	Priority date (day/month/year) 23.09.2003
International Patent Classification (IPC) or national classification and IPC F24C7/08, F24C7/04, F24C7/06, F24C15/10		
Applicant CERAMASPEED LIMITED et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 9 sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand 11.04.2005	Date of completion of this report 07.09.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Merkt, A Telephone No. +49 89 2399-2935	



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/004001

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-3, 7-19	as originally filed
4-6	received on 11.04.2005 with letter of 08.04.2005

Claims, Numbers

1-20	received on 11.04.2005 with letter of 08.04.2005
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Drawings, Sheets

1/5-5/5	as originally filed
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- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/GB2004/004001

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-20
	No: Claims	
Inventive step (IS)	Yes: Claims	1-20
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Re Item V.

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

- 1 The following documents are referred to in this communication:
D1 : WO 03/063551 A (MCWILLIAMS KEVIN RONALD ; WILKINS PETER
RAVENSCROFT (GB); CERAMASPEED) 31 July 2003 (2003-07-31)
D2 : US 4 217 481 A (FISCHER KARL) 12 August 1980 (1980-08-12)

2 INDEPENDENT CLAIM 1

- 2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows (the references in parentheses applying to this document) all the features of the preamble (even the constructive ones, which normally do not belong to the claimed subject-matter in method claims) of the subject-matter of claim 1.

The subject-matter of claim 1 differs therefrom by the method steps of the characterizing portion.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as to improve the control over different boiling functions..

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) as said solution is not rendered obvious by the available prior art documents.

3. DEPENDENT CLAIMS 2-20

Claims 2-20 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

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(SEPARATE SHEET)**

International application No.

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The industrial applicability of the invention is obvious.

Re Item VII.

Certain defects in the international application

Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.

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According to the present invention there is provided a method of controlling boiling level in an electric cooking assembly, the assembly comprising:

- 5 a cooking plate having a lower surface in contact with which is supported an electric heater and an upper surface adapted to receive a cooking utensil containing a material to be subjected to boiling on a heating zone overlying the electric heater;
- 10 the electric heater incorporating at least one electric heating element and a first temperature-responsive device for controlling the temperature of the cooking plate within predetermined limits;
- 15 control means for controlling energising of the electric heater from a power supply; and
- 20 manual input selection means associated with the control means,

the method including the steps of:

- 25 providing a second temperature-responsive device arranged adjacent to the lower surface of the cooking plate and adapted to monitor temperature of

- 5 -

the cooking utensil through the cooking plate, the temperature-responsive device incorporating a temperature sensing element having an electrical parameter which changes as a function of temperature and which is electrically connected to the control means;

providing on the manual input selection means a plurality of predetermined user-selectable boiling levels for the material in the cooking utensil;

associating in the control means each predetermined boiling level with a predetermined temperature sensed by the temperature sensing element, the predetermined sensed temperature being offset relative to an actual temperature representative of each respective boiling level, the offset being different for each respective boiling level; and

controlling the boiling level of the material in the cooking utensil by energising the heater at a corresponding power level.

The second temperature-responsive device may be arranged substantially in contact with the lower surface of the cooking plate.

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The cooking plate may comprise glass-ceramic material.

The temperature sensing element may operate in closed loop manner with the control means, for controlling
5 energising of the electric heater from the power supply.

Means may be provided to shield the temperature sensing element and a corresponding overlying region of the lower surface of the cooking plate from direct thermal
10 radiation from the at least one electric heating element.
Such means may comprise thermal insulation material.

The second temperature-responsive device may be arranged adjacent to the lower surface of the cooking plate at a
15 peripheral region of the heating zone.

The temperature sensing element may comprise a material, such as platinum, whose electrical resistance changes as a function of temperature and which may be provided in
20 film form on a supporting substrate.

The control means may comprise microprocessor-based electronic circuitry.

25 The predetermined boiling levels may comprise a low or simmer boiling level, a medium boiling level and a high or rolling boiling level.

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CLAIMS

1. A method of controlling boiling level in an electric cooking assembly (2), the assembly comprising:

5

a cooking plate (4) having a lower surface (10) in contact with which is supported an electric heater (12) and an upper surface (6) adapted to receive a cooking utensil (8) containing a material to be subjected to boiling on a heating zone (4A) overlying the electric heater;

10

the electric heater incorporating at least one electric heating element (20) and a first temperature-responsive device (120) for controlling the temperature of the cooking plate (4) within predetermined limits;

15

control means (28) for controlling energising of the electric heater from a power supply (24); and

20

manual input selection means (106) associated with the control means,

25

characterised by the steps of:

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providing a second temperature-responsive device
(30) arranged adjacent to the lower surface of the
cooking plate and adapted to monitor temperature of
the cooking utensil through the cooking plate, the
5 second temperature-responsive device incorporating a
temperature sensing element (38) having an
electrical parameter which changes as a function of
temperature and which is electrically connected to
the control means (28);

10

providing on the manual input selection means (106)
a plurality of predetermined user-selectable boiling
levels for the material in the cooking utensil;

15

associating in the control means (28) each
predetermined boiling level with a predetermined
temperature sensed by the temperature sensing
element (38), the predetermined sensed temperature
being offset relative to an actual temperature
20 representative of each respective boiling level, the
offset being different for each respective boiling
level; and

25

controlling the boiling level of the material in the
cooking utensil (8) by energising the heater (12) at
a corresponding power level.

2. A method according to claim 1, characterised in that the second temperature-responsive device (30) is arranged substantially in contact with the lower surface (10) of the cooking plate (4).

3. A method according to claim 1 or 2, characterised in that the cooking plate (4) comprises glass-ceramic material.

10

4. A method according to any preceding claim, characterised in that the temperature sensing element (38) operates in closed loop manner with the control means (28), for controlling energising of the electric heater (12) from the power supply (24).

5. A method according to any preceding claim, characterised in that means (62) is provided to shield the temperature sensing element (38) and a corresponding overlying region of the lower surface (10) of the cooking plate (4) from direct thermal radiation from the at least one electric heating element (20).

6. A method according to claim 5, characterised in that the shielding means (62) comprises thermal insulation material.

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7. A method according to any preceding claim,
characterised in that the second temperature-responsive
device (30) is arranged adjacent to the lower surface
(10) of the cooking plate (4) at a peripheral region of
5 the heating zone (4A).

8. A method according to any preceding claim,
characterised in that the temperature sensing element
(38) comprises a material whose electrical resistance
10 changes as a function of temperature.

9. A method according to claim 8, characterised in that
the material is provided in film form on a supporting
substrate (32).

15

10. A method according to claim 8 or 9, characterised in
that the material comprises platinum.

11. A method according to any preceding claim,
20 characterised in that the control means (28) comprises
microprocessor-based electronic circuitry.

12. A method according to any preceding claim,
characterised in that the predetermined boiling levels
25 comprise a low or simmer boiling level, a medium boiling
level and a high or rolling boiling level.

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13. A method according to claim 12, characterised in that the low or simmer boiling level is associated with a temperature sensed by the temperature sensing element (38) in a range of about 140 to about 190 degrees 5 Celsius.

14. A method according to claim 13, characterised in that the low or simmer boiling level is associated with a temperature sensed by the temperature sensing element 10 (38) of about 170 degrees Celsius.

15. A method according to any of claims 12 to 14, characterised in that the medium boiling level is associated with a temperature sensed by the temperature 15 sensing element (38) in a range of about 160 to about 210 degrees Celsius.

16. A method according to claim 15, characterised in that the medium boiling level is associated with a 20 temperature sensed by the temperature sensing element (38) of about 190 degrees Celsius.

17. A method according to any of claims 12 to 16, characterised in that the high or rolling boiling level 25 is associated with a temperature sensed by the

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temperature sensing element (38) above about 210 degrees Celsius.

18. A method according to claim 17, characterised in
5 that the high or rolling boiling level is associated with
a temperature sensed by the temperature sensing element
(38) of about 220 degrees Celsius.

19. A method according to any of claims 12 to 18,
10 characterised in that selection of the high or rolling
boiling level results in operation of the heater (12) at
substantially full power.

20. A method according to any preceding claim,
15 characterised in that the manual input selection means
(106) comprises one or more switch means.

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